

## ABSTRACT

An optical pulse extender includes a delay loop formed by a plurality of mirrors and a graded reflectivity beamsplitter. The mirrors and the beamsplitter are configured and aligned such that a pulse to be broadened makes a predetermined number of round trips in the delay loop and is incident on a different zone of the beamsplitter after each round trip. The different zones of the beamsplitter have different reflection values and different transmission values. These values are selected such that the pulse extender delivers a plurality of temporally and spatially separated replica pulses each thereof having about the same energy. The delivered replica pulses together provide an extended pulse having a longer duration than the input pulse. The replica pulses may be passed through a beam homogenizer to spatially homogenize the temporal characteristics of the extended pulse.

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